CAIT
Center for Advanced Infrastructure & Transportation
Rutgers, The State University of New Jersey

NJDOT Bureau of Research
QUARTERLY PROGRESS REPORT

Project Title:	TRANSPORTATION SAFETY RESOURCE CENTER
RFP NUMBER:	NJDOT RESEARCH PROJECT MANAGER: Patricia Ott
TASK ORDER NUMBER: 150 / 4-29142	PRINCIPAL INVESTIGATOR: Dr. Ali Maher
Project Starting Date: 4/1/2004 **Original** Project Ending Date: 12/31/2004 **Modified Completion Date:** 12/31/2005	Period Covered: 3rd Quarter 2005

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
1. Startup	30	0	100	30
2. Database Development	30	60	83	25
3. Analysis/Traffic Engineering	30	40	83	25
4. Technology Transfer	10	0	100	10
TOTAL	100%			90%

Project Objectives:

The center will strive to assist NJDOT in their efforts to improve highway safety by creating a new core program that consolidates existing efforts championed by both the Federal Highway Administration (FHWA) and the National Highway Traffic Safety Administration (NHTSA). The TSRC will provide services to the NJDOT Division of Traffic Engineering and Safety Programs, along with technical support on merging specialized data sources with the New Jersey Crash Records System.

More Specifically the TSRC will partner with the NJDOT to develop and deliver training programs and technical assistance programs to supply the locals with the preliminary analysis of crash data using advanced decision support systems. The TSRC will also provide support to the New Jersey Safety Conscious Planning (SCP) Network that has been established between NJDOT and the Metropolitan Planning Organizations (MPO). Research and Technical support will also be provided to NJDOT with the efforts to establish a comprehensive Safety Management System (SMS) which will integrate existing and yet to be identified databases involving both traditional and non-traditional stakeholders.

The center will be focused on assisting locals with developing safety solutions that meet the “tier one” or quick fix/low cost projects. By using the resources of the center, the local users will package and present their problems to NJDOT along with potential solutions. This will then allow for a much more efficient and objective response from the NJDOT.

Project Abstract:

The Transportation Safety Resource Center is a partnership between federal and state transportation agencies, local stakeholders, academic institutions, and the private sector to provide technical and educational services to address transportation safety in New Jersey.

1. Progress this quarter by task:

- The TSRC is represented on the SMTF and the Safety Management core group.

- TSRC staff members conducted 16 strategic planning workshops and coordinating data collection activities required for compiling a draft of the New Jersey Comprehensive Safety Plan.

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Dates	Program	Participants
6/3/05	Strategic Planning Workshop - Older Driver	20
6/6/05	Strategic Planning Workshop - Roadway Departures	12
6/15/05	Strategic Planning Workshop - Pedestrian/Bike/Rail	21
6/8/05	Strategic Planning Workshop - Driver Safety Awareness	26
6/14/05	Strategic Planning Workshop- Aggressive Driving	11
6/13/05	Strategic Planning Workshop - Intersection Design	19
6/16/05	Strategic Planning Workshop - Young Drivers	16
6/17/05	Strategic Planning Workshop - Impaired Drivers	16
6/20/05	Strategic Planning Workshop - Older Driver	17
6/21/05	Strategic Planning Workshop - Intersection Design	20
6/22/05	Strategic Planning Workshop - Driver Safety Awareness	15
6/23/05	Strategic Planning Workshop - Roadway Departures	9
6/23/05	Strategic Planning Workshop - Pedestrian/Bike/Rail	19
6/24/05	Strategic Planning Workshop - Impaired Drivers	8
6/27/05	Strategic Planning Workshop - Aggressive Driving	12
6/28/05	Strategic Planning Workshop - Young Drivers	11

- The paper, entitled Local Adoption of Safety Conscious Planning, was presented at the Mid Continent Research Safety Symposium in Ames, Iowa on August 18th. The TRB representative, S. Parker, recommended that the paper be submitted to appropriate TRB Committees for consideration as part of their conference programming because selections had already been made for the 2006 research sessions.

- C. Knezek represented TSRC and visited the Iowa CTRE operation. She met with Tom Welsh, the State Safety Engineer, to interview him on the services that are being provided for local transportation agencies. He highly recommended that the crash data be plotted and distributed to the locals for identification of their needs.

- Our full time traffic engineer has continued work that had begun in the previous quarter. This quarter the activities have consisted of:

    - Meetings with the NJDOT once a week. These meetings are to coordinate the activities of the TSRC units as well as to continue to obtain an overview of each bureau within Traffic Engineering and Safety and to develop a process for Rutgers relationship with these bureaus.
    - Continued to provide input for and testing of the basic statistical software that has been developed for crash analysis by the database team as well as assist in the further development of the software, including future releases featuring GIS as well as advanced modeling tools.
    - Work has continued to establish a Steering Committee, in coordination with the Bureau of Safety Programs, to guide the development of subsequent phases of crash analysis software.
    - The traffic engineer will be meeting with select municipality and county representatives to deliver traffic engineering services on a pilot program basis.

  - Work has also begun on the development of a Traffic Signal Design Course that will be offered to local agencies.
  - The traffic engineer has been working with other members of the TSRC as well as the DOT on updating the TSRC Business Plan as well as developing a work plan.
  - Plans are also being made for a TSRC open house, which is now tentatively scheduled for the middle of October.

- The IT team at the TSRC has released the first version of the decision making and analysis tool "Plan4Safety." This application is exclusively designed for the analysis of the crash data for the State of New Jersey and is to be used by the New Jersey Department of Transportation (NJDOT) traffic engineers and planners. Plan4Safety provides a user friendly environment for analyzing the crash records and presenting them as charts or other graphical tools. In Plan4Safety the users can easily create filters to generate subsets of the whole data set. The filters can include attributes of all 5 tables. The generated subset of data can be statistically analyzed in detail, using record, frequency, cross-tabulation view tools. The data can be printed in any format.

- The following are some of the features and background of Plan4Safety's functionality:

  - The structure of the database and tables of the crash data in New Jersey makes the use of existing crash data analysis tools almost impossible.
  - The domain of the available tools is mostly restricted to categorical data, represented by nominal or ordinal values. Plan4Safety, on the other hand, is designed in a way that even non-categorical data can be represented in datasheets. This helps the engineers and planners to easily find the information about specific types of crashes. For instance, users are able to easily search for the crashes happened at a particular intersection in a specific county, which can include all types of vehicles.
  - Most of the time the planners need to analyze the data based on the attributes of a crash - for example number of occupants or pedestrians involved.
  - Users in Plan4Safety are able to have a cross-tabulation (cross product) of more than two variables at the same time. Cross-tabulation in Plan4Safety provides a tool for frequency and relationship analysis between two or more variables.
  - For the future modeling and decision making, this tool will be extremely vital. The future tools will be designed and implemented in the Plan4Safety environment.

- Plan4Safety version 1.0 was released on a DVD. This DVD includes the necessary files for the installation of the application on windows based PCs. It also includes the crash records from 2001 to 2004 in MS Access format. An installation guide and a user manual were provided as well.

- The IT team has also continued the work on the GIS view functionalities. Having geo-coded data in hand, the application will provide a mapping tool which locates the crashes on the map of New Jersey. A set of individual crashes can be selected on the map to create a filter based on crash locations. This feature will be added in the next release as Plan4Safety version 1.1.

- This team has also continued to work on different mathematical models which will be implemented in the same environment in the future. We are mainly investigating the Ordered Variables model. The main objective is to discover the attributes which have the most contribution in causing the crashes on the roads.

- The team has also started to implement a web-based version of Plan4Safety upon NJDOT's request. In order to make this happen, we must convert the MS Access database to Oracle 8i. This will accelerate the speed of online queries. The interfaces are going to be written in ASP.NET.

2. Proposed activities for next quarter by task:

- Continuation of work on the TSRC website that will be publicized during the upcoming Open House.

- The TSRC staff will continue to help with the SMTF and the development of a New Jersey Comprehensive Safety Plan that is being drafted for review during September 2005.

- The traffic engineer will continue to work closely with NJDOT to tie the organizations together.

- The traffic engineer will also begin work on the database analysis as well as working with the MPO's and local agencies to establish a protocol for service delivery.

- Continuation of the design and implementation of a statistical analysis tool as well as the decision making layer of the database. More specifically to continue to update and enhance the software with more versions that will contain additional features. These features will include the GIS view functionalities, work on different mathematical models which will be implemented in the same environment, as well as converting the program over to Oracle and implementing a web-based version of Plan4Safety.

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3. List of deliverables provided in this quarter by task (product date):

07/22/2005 - Initial presentation of the first version of the software program Plan4Safety.
08/04/2005 - Plan4Safety Version 1.0 delivery.

4. Progress on Implementation and Training Activities:

Not at implementation.

5. Problems/Proposed Solutions:

Total Project Budget	$850,000
Modified Contract Amount:	
Total Project Expenditure to date	$300,217
% of Total Project Budget Expended	35%

* These are approximate expended amounts for the project; these estimates are for reference only and should not be used for official accounting purposes. For a more accurate project accounting please review the quarterly invoice for this project.